United States
Environmental Protection
Agency

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EPA

April 2, 1992

**Reply to**
**Attn of:** WD-139

Marvin Plenert
Regional Director
U.S. Fish and Wildlife Service
911 N.E. 11th Avenue
Portland, Oregon 97232-4181

Dear Mr. Martin:

This is a follow-up to my February 5, 1992 letter to your Agency requesting formal consultation under section 7 of the Endangered Species Act to determine whether levels of 2,3,7,8-tetrachlorodibenzo-p-dioxin (dioxin) in the Columbia River to be attained through implementation of a Total Maximum Daily Load (TMDL) would jeopardize the continued existence of bald eagles. We do not believe that the recent information on dioxin in bald eagle eggs indicates a need for formal consultation with regard to dioxin effects on other listed species in the Columbia River basin, but please let us know if you view this differently.

The purpose of this letter is to provide the Fish and Wildlife Service (FWS) with background information supporting our conclusion that it is not likely that such dioxin levels will jeopardize the continued existence of bald eagles. I also wish to apprise you of the status of analyses of dioxin levels in two additional bald eagle eggs collected by the FWS.

The TMDL was established on February 25, 1991, to ensure compliance with applicable water quality standards for dioxin. The TMDL is designed to attain concentrations of dioxin in the Columbia River and its tributaries that do not exceed .013 parts per quadrillion (ppq) in the water at the harmonic mean flow. The TMDL is applicable to all portions of the Columbia River basin below the U.S.-Canada border. Enclosed is the TMDL Decision Document, which explains the scope of the TMDL and the basis for its establishment (Enclosure 1). I have also enclosed information on the levels of dioxin discharged by the pulp and paper mills in the Columbia River as of 1988 (Enclosure 2).

Our evaluation of recent data on the effects of dioxin on wildlife concludes that achievement of an ambient water concentration for dioxin of .013 ppq will not jeopardize the

continued existence of bald eagles. This conclusion is supported by the following information:

1. FWS publication entitled, "Dioxin Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review." Biological Report 85(1.8). May 1986. Contaminant Hazard Reviews. Report No. 8.

   This report concludes that dioxin concentrations in water should not exceed 10 ppq to protect aquatic life, and should not exceed 10-12 parts per trillion (ppt) in food items of birds and other wildlife (Enclosure 3).

   In deriving water quality criteria for dioxin for protection of human health, EPA used a bioconcentration factor of 5000; that is, EPA estimated that fish and other aquatic organisms exposed to dioxin-contaminated water accumulate dioxin in their bodies to a level which is 5000 times higher than the concentration in the water. Based on a bioconcentration factor of 5000, attainment of a dioxin concentration of .013 ppq in the water would result in a concentration of less than .1 ppt in aquatic organisms (including fish), well below the level considered protective of all forms of wildlife (presumably including bald eagles) in the FWS document referenced above. The diet of bald eagles living in the Columbia River basin can be expected to consist almost entirely of fish. See Declaration of Dr. Steven P. Bradbury, ¶¶ 8.b. and 11.a.

   Recent information indicates that fish and other aquatic organisms may bioconcentrate dioxin by more than a factor of 5000. See Declaration of Dr. Steven P. Bradbury, ¶ 8.c. However, from the discussion above, it would appear that bioconcentration rates for dioxin 100 times higher would still result in dioxin concentrations in fish and other aquatic life of less than 10 ppt if the concentration in the water was .013 ppq or less.

2. Declaration of Dr. Steven P. Bradbury, dated February 12, 1992.

   In his declaration, Dr. Bradbury estimates that bald eagles should not be adversely affected when exposed to a dioxin dose of less than 140 picograms/kilogram of body weight/day (pg/kg/day). Dr. Bradbury concludes that attainment of an ambient dioxin concentration of .013 ppq, the concentration upon which the TMDL for the Columbia River is based, should result in an estimated bald eagle dose of 130 pg/kg/day. Consequently, Dr. Bradbury concludes that attainment of the TMDL for dioxin should be protective of bald eagles (Enclosure 4).

Please note that there is uncertainty inherent in conducting risk evaluations or assessments. It is more appropriate to view risk numbers as ranges of risks, rather than as absolute numbers. The risk estimates for bald eagles included in this analysis should be viewed as estimates of the upper level of the range of risks. Enclosed is a memo from F. Henry Habicht, II, dated February 26, 1992, which discusses EPA's guidance on the use of risk estimates (Enclosure 5). Consistent with this perspective, Dr. Bradbury acknowledges in his declaration the uncertainties in his assessment. However, the positions being taken by Dr. Bradbury are consistent with current practice and, in Dr. Bradbury's scientific opinion, represent a balanced judgment of the available data.

Dr. Bradbury's declaration was filed with the United States Court of Appeals for the Ninth Circuit in the context of EPA's response to petitions challenging EPA's TMDL. For your information, we have also enclosed declarations by Donald C. Malins and Ian Christopher Nisbet, filed by petitioners Columbia River United in the same case (Enclosures 6 and 7). The Malins and Nisbet declarations include broad allegations of past and present reproductive failure of bald eagles in the Columbia River basin, and unsubstantiated speculation that this failure may result from the presence in the Columbia River of dioxin and a host of other chemicals. To the extent that the Malins and Nisbet declarations allege that dioxin levels to be attained through implementation of the TMDL will harm bald eagles, these allegations are refuted by Dr. Bradbury's declaration. Dr. Bradbury presents an assessment of risk to bald eagles from dioxin in surface waters based on the best scientific data available, and using the methodology to interpret the data that EPA uses when assessing risks to humans from exposure to environmental contaminants.

I have also enclosed a reply declaration by Ian Nisbet, which attempts to respond to Dr. Bradbury's February 28, 1992 declaration (Enclosure 8). Again, a critical assertion underlying the arguments in both declarations by Nisbet is that dioxin and closely related compounds are already contributing to reproductive impairment in bald eagles in the Columbia River basin. As the enclosed memo from Dr. Bradbury to Rick Albright of my staff, dated March 25, 1992, indicates, Dr. Nisbet does not attempt to quantify the current dioxin risk level, nor does Dr. Nisbet attempt to quantify future dioxin risk based on implementation of the TMDL. Dr. Bradbury also refutes other contentions made in Nisbet's reply declaration in this memo (Enclosure 9).

In his reply declaration, Nisbet also contends that EPA did not consider the resuspension of dioxin associated with sediments in developing the TMDL. While EPA did not believe that there was

adequate information to model effects of sediment resuspension, EPA did acknowledge that resuspension would occur, and addressed this and other uncertainties by incorporating a margin of safety in the TMDL. (This is discussed in Enclosure 1.)

As discussed in our February 5 letter, our decision to request formal consultation was based on levels of dioxin observed in addled eagle eggs from the Columbia River basin. The limited data on dioxin levels in addled eagle eggs collected from the Columbia River basin to date indicates that eagles in the basin have been accumulating dioxin in their tissues, and that the dioxin can be transferred to eagle eggs. While EPA believes that the knowledge that dioxin is currently present in eagle eggs warrants a very careful analysis, we believe that the best scientific evidence indicates that the reduced dioxin levels in the Columbia River basin to be attained through implementation of the TMDL will not be harmful to bald eagles.

EPA believes that information regarding levels of dioxin in addled bald eagle eggs collected in the past is itself of limited use in assessing whether dioxin levels to be attained in the future through implementation of the TMDL will be harmful to bald eagles. However, we do believe that this information will provide a useful baseline of information against which future levels of dioxin in eagle eggs can be compared as the TMDL is fully implemented. Dioxin levels in the eggs over time could perhaps be compared to the eagles' reproductive success rate over time to determine whether there is a correlation between dioxin levels in eagle eggs and reproductive success. EPA Region 10 will be committing additional funds to support the analyses of dioxin levels in the remaining two eagle eggs sent by your staff to our laboratory in Duluth, Minnesota. We also hope to fund analyses for other dioxin and furans, along with co-planar PCBs, for the five eggs at the Duluth lab. We anticipate that results from these analyses will be available in June 1992.

EPA is currently in the process of reassessing the risk of dioxin. This reassessment constitutes a major effort on the Agency's part to improve the science behind the regulation of dioxin discharges. The reassessment will address the risk of dioxin to humans and to the environment, including aquatic life and wildlife. If the results of the reassessment indicate that the TMDL is not stringent enough to protect human health or the environment, EPA will revise the TMDL as needed.

Please notify me or have your staff contact Rick Albright at FTS 399-8514 if you have any questions concerning our dioxin TMDL or its effect on threatened or endangered species.

Sincerely,

Charles E. Findley
Director, Water Division

Enclosures

cc: Carol Schuler
Diana Hwong

ENCLOSURE 1